

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



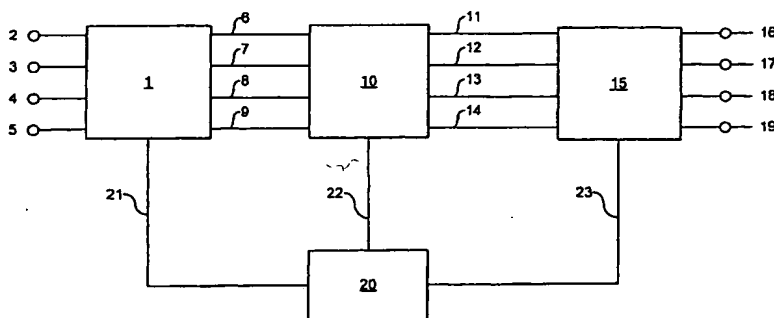
(43) International Publication Date  
15 January 2004 (15.01.2004)

PCT

(10) International Publication Number  
**WO 2004/006516 A2**

- (51) International Patent Classification<sup>7</sup>: **H04L 12/56**
- (21) International Application Number:  
**PCT/GB2003/002773**
- (22) International Filing Date: **30 June 2003 (30.06.2003)**
- (25) Filing Language: **English**
- (26) Publication Language: **English**
- (30) Priority Data:  
**0215505.9** **4 July 2002 (04.07.2002)** **GB**
- (71) Applicant (*for all designated States except US*): **CAMBRIDGE UNIVERSITY TECHNICAL SERVICES LIMITED [GB/GB];** The Old Schools, Cambridge, Cambridgeshire CB2 1TS (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): **SCARR, Robert, Walter, Alister [GB/GB];** 63 Lower Street, Stansted Mountfitchet, Essex CM24 8LR (GB). **CROSSLAND, William, Alden [GB/GB];** "OddSpot", 15 School Lane, Harlow, Essex CM2 2QD (GB).
- (74) Agents: **NEOBARD, William, John et al.; Kilburn & Strode, 20 Red Lion Street, London WC1R 4PJ (GB).**
- (81) Designated States (*national*): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.**
- (84) Designated States (*regional*): **ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).**
- Published:  
— *without international search report and to be republished upon receipt of that report*
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: **PACKET ROUTING**



(57) Abstract: A packet router has an input stage, an output stage and a coupling stage for coupling the input and output stages. The input stage has plural input devices, the output stage has plural output devices and the coupling stage provides paths for signals between output elements of the input devices and input elements of the output devices. Each input device has circuitry arranged to respond to packet destination data of a packet received by its input device for adding, to the packet data of the packet, information indicative of a router output node at which the packet is to be output. The router has a controller connected to the input stage and to the coupling stage for causing packets to be output to said coupling stage in dependence on this information. Each output device has circuitry for removing the information prior to output of packets. The router has a connecting device receiving signals from paths of the coupling stage and to transfer the signals to a further output device disposed remote from the input stage.

## INTERNATIONAL SEARCH REPORT

PCT/GB 03/02773

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H04L12/56

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04L H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 215 857 A (ALCATEL CANADA INC) 19 June 2002 (2002-06-19)	1-6
Y	column 1 - column 2 column 5 - column 9 paragraph [0039] column 12, line 50 - line 52 paragraph [0068] - paragraph [0069] paragraph [0076] - paragraph [0077] figures 1,2,7	7-11
X	EP 1 100 233 A (FUJITSU LTD) 16 May 2001 (2001-05-16) paragraph [0004] paragraph [0007] paragraph [0012] - paragraph [0025] paragraph [0052] - paragraph [0090] paragraph [0119] - paragraph [0132]; figures 1-15	1-6
	----- -/--	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance  
 "E" earlier document but published on or after the international filing date  
 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  
 "O" document relating to an oral disclosure, use, exhibition or other means  
 "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  
 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone  
 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art  
 "&" document member of the same patent family

Date of the actual completion of the international search

9 October 2003

Date of mailing of the international search report

16. 01. 04

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Jaskolski, J

## INTERNATIONAL SEARCH REPORT

PCT/GB 03/02773

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/43323 A (NORTEL NETWORKS LTD) 30 May 2002 (2002-05-30) page 4, line 18 - line 31 page 7, line 19 - page 8, line 17 page 9, line 1 - line 29 page 10, line 16 - page 12, line 30 page 16, line 1 - page 19, line 9; figures 1-6	1,3-5
Y	----- WO 01/035185 A (TELCORDIA TECH INC) 17 May 2001 (2001-05-17) page 6, line 19 - page 7, line 2 page 13, line 5 - page 14, line 15 page 16, line 15 - page 30, line 18 page 31, line 8 - line 11 page 33, line 8 - page 38, line 13; figures 2-4 -----	7-11

# INTERNATIONAL SEARCH REPORT

PCT/GB 03/02773

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-11

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-11

a packet router comprising a connecting device arranged to receive signals from paths of a coupling stage and to transfer the signals to an output device disposed remote from an input stage.  
---

2. claims: 12-19

a network comprising at least two packet routers, wherein at least one of input devices of the second packet router is provided by an output device of the first packet router such that each queue of packet data received from a coupling stage of the first router forms a queue of packet data prior to issue to a coupling stage of the second router.  
---

3. claims: 20-33

a method of routing packets using a packet router comprising an input stage, plural output devices and a coupling stage, by determining whether a path is available from an input of a coupling stage to an output connected to an output device.  
---

# INTERNATIONAL SEARCH REPORT

PCT/GB 03/02773

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1215857	A	19-06-2002	CA 2327918 A1 EP 1215857 A2 US 2002071439 A1	08-06-2002 19-06-2002 13-06-2002
EP 1100233	A	16-05-2001	JP 2001144804 A EP 1100233 A2	25-05-2001 16-05-2001
WO 0243323	A	30-05-2002	AU 3295602 A CA 2429634 A1 EP 1358738 A2 WO 0243323 A2	03-06-2002 30-05-2002 05-11-2003 30-05-2002
WO 0135185	A	17-05-2001	AU 8017500 A TW 502510 B WO 0135185 A2 US 2001017723 A1	06-06-2001 11-09-2002 17-05-2001 30-08-2001